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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

LEE, CYNTHIA K

ART UNIT PAPER NUMBER

1745

DATE MAILED: 04/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/620,910

Applicant(s)

CHAMPION, DAVID

Examiner

Cynthia Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 March 2006.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19, 21-23 and 43 is/are pending in the application.
4a) Of the above claim(s) 4 and 17 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-3, 5-16, 18, 19, 21-23 and 43 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office Action is responsive to the amendment filed on 3/27/2006. Claim 20 has been canceled and claim 43 has been added. Claims 1-19, 21-23, and 43 are pending. Claims 3, 4, and 17 are withdrawn from further consideration as being drawn to a non-elected invention. Claims 1-3, 5, 6, 8, 11-13, and 19 have been amended. Full consideration was given to claims 1, 2, 5-16, 18, 19, 21-23, and 43.

The 35 USC 112, 1st paragraph rejection has been withdrawn.

The 35 USC 112, 2nd paragraph rejections have been withdrawn.

Applicant's arguments have been considered, but are not persuasive. Thus, claims 1, 2, 5-16, 18, 19, 21-23, and 43 are finally rejected for reasons of record and for reasons necessitated by applicant's amendment.

Claim Analysis

MPEP 2181 states that:

A claim limitation will be interpreted to invoke 35 U.S.C. 112, sixth paragraph, if it meets the following 3-prong analysis:

- (A) the claim limitations must use the phrase "means for" or "step for;"
- (B) the "means for" or "step for" must be modified by functional language;
and
- (C) the phrase "means for" or "step for" must not be modified by sufficient structure, material or acts for achieving the specified function.

MPE 2181 further states that:

With respect to the third prong of this analysis, see *Seal-Flex*, 172 F.3d at 849, 50 USPQ2d at 1234 (Radar, J., concurring) ("Even when a claim element uses language that generally falls under the

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step-plus-function format, however, 112 ¶ 6 still does not apply when the claim limitation itself recites sufficient acts for performing the specified function.”); *Enviro Corp. v. Clestra Cleanroom, Inc.*, 209 F.3d 1360, 54 USPQ2d 1449 (Fed. Cir. 2000) (holding “second baffle means” does not invoke 35 U.S.C. 112, sixth paragraph, because the word “baffle” itself imparts structure and the claim further recites the structure of the baffle); *Rodime PLC v. Seagate Technology, Inc.*, 174 F.3d 1294, 1303–04, 50 USPQ2d 1429, 1435–36 (Fed. Cir. 1999) (holding “positioning means for moving” does not invoke 35 U.S.C. 112, sixth paragraph, because the claim further provides a list of the structure underlying the means and the detailed recitation of the structure for performing the moving function removes this element from the purview of 35 U.S.C. 112, sixth paragraph); *Cole v. Kimberly-Clark Corp.*, 102 F.3d 524, 531, 41 USPQ2d 1001, 1006 (Fed. Cir. 1996) (holding “perforation means...for tearing” does not invoke 35 U.S.C. 112, sixth paragraph, because the claim describes the structure supporting the tearing function (i.e., perforation)). In other cases, the Federal Circuit has held otherwise. See *Unidynamics Corp. v. Automatic Prod. Int'l*, 157 F.3d 1311, 1319, 48 USPQ2d 1099, 1104 (Fed. Cir. 1998) (holding “spring means” does invoke 35 U.S.C. 112, sixth paragraph). During examination, however, applicants have the opportunity and the obligation to define their inventions precisely, including whether a claim limitation invokes 35 U.S.C. 112, sixth paragraph. Thus, if the phrase “means for” or “step for” is modified by sufficient structure, material or acts for achieving the specified function, the USPTO will not apply 35 U.S.C. 112, sixth paragraph, until such modifying language is deleted from the claim limitation.

Claim 19 does not meet prong 3 of the 3-prong test because the “means for” language has been sufficiently modified with structural limitations, i.e. “from the outer region to the inner region and at least once around the perimeter of the inner region”. Claim 19 has been further amended to recite further structural limitations “such that all of the byproducts and any unused reactants that exit the fuel cell assembly exit by way

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of the inner region.” Thus claim 19 has been treated as not invoking 35 USC 112, 6th paragraph. Accordingly, this Action is made Final.

The Office notes that rejection of Nakanishi (US 4910100) in view of Montemayor (US 6063517) for claims 14-16 and 18 should have been noted as a 103(a) rejection in the prior Office Action.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 5-7, 9, 12, 19, 22, 43 are rejected under 35 U.S.C. 102(b) as being anticipated by Montemayor (US 6063517).

Montemayor discloses a spiral-shaped fuel cell assembly with an outer casing. The MEA is wound several times to form a spiral bundle from the periphery of the housing to the center. The reactant path follows the spiral bundle that extends around the perimeter. The hydrogen gas enters and exits from the hydrogen injection tubes located in the periphery and the center of the fuel cell assembly. The MEA winds around the hydrogen injection tube 24 (fig. 2) at least once around the perimeter. The oxidant inlet is also associated with the outer region. (See fig. 2 and 3 and 2:25-39 and 5:13-45) The fuel path is adjacent to the anode. Refer to Fig. 1. The catalyst layer 16 is adjacent to the anode layer 14.

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Although Montemayor does not expressly disclose a reactant supply connected to the reactant inlets (applicant's claims 11 and 23), a reactant supply must necessarily be present for the hydrogen gas to be flowing through the hydrogen tubes.

Montemayor discloses that the anode/cathode arrangement has a spiral shape that extends more than once around the perimeter of the exhaust region and defines a reactant having an outlet end associated with the exhaust region and an inlet end. The Office is interpreting the arrow 22 in Fig. 3 as the exhaust region and thus, all of the byproducts and any unused reactants that exit the fuel cell assembly exit by way of the inner region (applicant's claim 19).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8, 11, 13 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Montemayor (US 6063517) as applied to claims 1, 12, and 19 above and incorporated herein.

Montemayor discloses all the limitations of claims 1, 12, and 19. Montemayor does not disclose a byproduct outlet region comprising first and second byproduct outlet regions (applicant's claim 8). However, Montemayor discloses one byproduct outlet region and it has been held that mere duplication of the essential working parts of a

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device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

Although Montemayor does not disclose a curvilinear spiral shape fuel cell, Montemayor discloses a spiral shape fuel cell and the courts have held that changes in shape are a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed invention was significant. *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966). See MPEP 2144.04.

Montemayor discloses that hydrogen and oxygen are supplied into the hydrogen tubes and the oxygen path. Further, an air or oxygen blower is present to inject the reactant gases. Although Montemayor does not expressly disclose a reactant supply connected to the reactant inlets (applicant's claims 11 and 23), a reactant supply must necessarily be present for the hydrogen gas to be flowing through the hydrogen tubes. Further, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a reactant supply for the benefit of providing reactant gas to the fuel cell to make the fuel cell operable.

Claims 10 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Montemayor (US 6063517) as applied to claims 1 and 20 above and incorporated herein, in view of Wattlelet (US 2003/0011721):

Montemayor discloses all the limitations of claims 1 and 20. Although Montemayor does not disclose a heat exchanger associated with the housing and

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connected to the exhaust port, Wattelet discloses a fuel cell with an integrated heat exchanger unit. The integrated heat exchanger unit exchanges heat with the air outlet to cool the fuel cell ([0008] and fig. 1). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to add an integrated heat exchanger unit to the cathode exhaust for the benefit of cooling the fuel cell.

Claims 14-16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakanishi (US 4910100) in view of Montemayor (US 6063517).

Nakanishi discloses a fuel cell with a spiral shaped gas flow path with an inner and an outer region in which an exhaust region defines a perimeter (fig. 6(A)). Although Nakanishi's assembly is a stacked plate assembly, Montemayor discloses a spiral shaped MEA. Montemayor teaches that the advantage to a spiral shaped fuel cell assembly is that the fuel cell could be increased in size simply by adding more spiral wraps without unduly increasing the distance over which the electrical current must be collected (1:50-55). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nakanishi's plate assembly with a spiral-shaped assembly for the benefit of decreasing the distance that current is collected, as taught by Montemayer.

The Office is interpreting the exhaust region to be defined as the outermost periphery of the spiral assembly and thus, the spiral shape extends more than once around the perimeter of the exhaust region. Further, it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70. It

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would have been obvious to one of ordinary skill in the art at the time the invention was made to configure the gas flow stream flowing from the outer periphery to the center, as taught by Montemayor, because either configuration would achieve gas delivery.

Response to Arguments

Applicant's arguments filed 3/27/2006 have been fully considered but they are not persuasive.

The Office has found the arguments to 35 USC 112, 1st and 2nd par. to be persuasive.

Applicant asserts that there is no fuel path adjacent to the anode in the Montemayor apparatus. Applicant asserts that the Montemayor anode is itself the fuel path.

The Office respectfully disagrees. The fuel path is adjacent to the anode. Refer to Fig. 1. The catalyst layer 16 is adjacent to the anode layer 14.

*Applicant asserts that the Montemayor apparatus is configured so that the unused hydrogen exits from the **outer region** in addition to the inner region (emphasis in original).*

The Office respectfully disagrees. The Office is interpreting the arrow 22 in Fig. 3 as the exhaust region and thus, meets the limitation of claim 19.

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*Applicant asserts that the prior art spiral configuration would extend more than once about the **reactant inlet region**, and not extend "more than once around the perimeter of the exhaust region."*

The Office respectfully disagrees. The Office is interpreting the exhaust region to be defined as the outermost periphery of the spiral assembly and thus, the spiral shape extends more than once around the perimeter of the exhaust region. Further, it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70. It would have been obvious to one of ordinary skill in the art at the time the invention was made to configure the gas flow stream flowing from the outer periphery to the center, as taught by Montemayor, because either configuration would achieve gas delivery.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cynthia Lee whose telephone number is 571-272-8699. The examiner can normally be reached on Monday-Friday 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ckl

Cynthia Lee

Patent Examiner



RAYMOND ALEJANDRO
PRIMARY EXAMINER